

**ABSTRACT OF THE DISCLOSURE**

Hydrothermally synthesized catalysts comprising a mixed metal oxide are utilized to produce unsaturated carboxylic acids by the vapor phase oxidation of an alkane, or a mixture of an alkane and an alkene, in the presence thereof; or to produce  
5 unsaturated nitriles by the vapor phase oxidation of an alkane, or a mixture of an alkane and an alkene, and ammonia in the presence thereof.